Missouri Pediatric Nutrition Surveillance System

2001 Full Report

Missouri Department of Health and Senior Services
Division of Community Health

Preface

This Missouri Pediatric Nutrition Surveillance report summarizes selected indices of health and nutritional status received from WIC clinics in 114 counties and St. Louis City in Missouri, which contributed to the program.

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The 2001 Missouri Pediatric Nutrition Surveillance System Executive Summary

With the assistance of the Centers for Disease Control and Prevention (CDC), the Missouri Pediatric Nutrition Surveillance System (PedNSS) monitors the growth, anemia and breastfeeding status of children in the state of Missouri who have participated in the federally-funded maternal and child health and nutrition programs such as the Special Supplemental Nutrition Program for Women, Infants and Children (WIC). Currently data collected in this system is primarily from low- to moderate-income infants and children participating in these programs.

This report provides:

1. Health and nutrition indicators for measuring the health and nutrition conditions of children aged 0-4 years who participated in the WIC program of Missouri in 2001;
2. Sociodemographic characteristics of the children in the WIC program;
3. Prevalence rates of health and nutrition indicators of 2001; and
4. Trends of prevalence rates of health and nutrition indicators from 1992 (or 1993) to 2001.

Health and Nutrition Indicators

Health and nutritional status data collected from children aged 0 to 4 years include birth weight (low birth weight), height and weight (short stature, underweight and overweight), anemia (low hemoglobin/hematocrit or low Hb/Hct), and breastfeeding (ever breastfed, breastfed at least 6 months, and breastfed at least 12 months). The data on birth weight and breastfeeding status are collected on children from birth to age 2.

Sociodemographic Characteristics

Missouri Department of Health and Senior Services submitted a total of 135,205 individual children's records in 2001 to CDC for analysis. The demographic information about Missouri PedNSS describes the percentage distributions of age, race/ethnicity, and regions.

The age distributions of the children in the 2001 Missouri PedNSS showed that children from 0-11 months old compose a large percentage (33.1 percent) of the PedNSS population. The children aged 12-23 months old, 24-35 months old, and 3-4 years old were 25.4 percent, 16.0 percent, and 25.5 percent respectively.

As reported in the previous years' PedNSS reports, the white and black children were the only two major race/ethnic groups in Missouri's PedNSS population. The children of these two groups were 67.2 percent and 22.1 percent respectively, and together composed 89.3 percent of the population assessed in 2001. The total number of participants of the other three race/ethnic

groups (Hispanic, American Indian/Alaskan Native, and Asian/Pacific Islander) composed less than 2 percent of the PedNSS population in this year.

Short Stature

The prevalence of short stature in the 2001 Missouri PedNSS was 6.5 percent. Among the five race/ethnic groups, the highest rate of short stature in Missouri PedNSS in 2001 was seen in black children (7.1 percent). Among the 7 districts of Missouri, the Central District and the Southwestern District had the highest rate (6.6 percent) in 2001. The overall prevalence rate for short stature in Missouri PedNSS declined steadily from 9.3 percent in 1992 to 6.1 percent in 1999, and then it increased again from 6.1 percent in 1999 to 6.5 percent in 2001.

Underweight

In 2001, the percentage of children found to be underweight was 4.9 percent in Missouri PedNSS. In 2001, black children in Missouri PedNSS had the highest percentage (7.7 percent) of underweight among five race/ethnic groups. Regionally, Missouri's Eastern District had the highest percentage (8.2 percent) of underweight in PedNSS in 2001, which was much higher than those of the other regions. The trend of underweight of Missouri PedNSS had been consistently going down from 8.3 percent in 1992 to 4.9 percent in 2001.

Overweight

In 2001, 11.0 percent of the Missouri PedNSS population was overweight. The prevalence of obesity among children in low-income populations has become one of the most serious nutrition-related problems and is a growing public health concern in Missouri. Hispanic children in Missouri PedNSS had the highest percentage of overweight (19.4 percent), and this rate was almost two times as high as Missouri's average level. Regionally, the Northeastern District had the highest rate of overweight (12.2 percent) in 2001. The trend of overweight for children in Missouri PedNSS went down from 8.8 percent in 1992 to 8.3 percent in 1993, and then went consistently up through the years to 11.0 percent in the year 2001.

Low Birth Weight

In the 2001 Missouri PedNSS, 8.9 percent of the children had a low birth weight. Black children had the highest percentage (11.8 percent) of low birth weight, and they were the only race/ethnic group that had a higher rate of low birth weight than the national average level (9.0 percent) in this year. Missouri's Eastern District had a relatively higher rate of low birth weight (10.4 percent) in 2001. The trend of the low birth weight rate of Missouri PedNSS showed slight fluctuations from 1992 to 2001.

Anemia

In 2001, the prevalence of anemia (low Hb/Hct) in the Missouri PedNSS was 16.8 percent. The black children's rate of anemia (20.2 percent) in Missouri was high compared with the average level of the state. Regionally, five of the seven districts of Missouri (Northwestern/Metro, Eastern, Central, Southeastern, and Northwestern/Cameron districts) had higher rates of anemia than the national average level (13.3 percent). Especially, the Northwestern/Metro District and the Eastern District had obviously higher percentages of anemia (20.5 percent and 21.2 percent respectively) among children in 2001 PedNSS compared with other regions of Missouri. There has been a general declining trend for the rate of anemia among children in Missouri PedNSS. However, the rate of anemia in Missouri has always been higher than the average level of the nation.

Infant Feeding Practice

In the Missouri 2001 PedNSS, the breastfeeding initiation rate was 47.3 percent. Black children had the lowest percentage (35.3 percent) of ever being breastfed. Regionally, Missouri's Southeastern District had the lowest rate (38.5 percent) of babies who had ever been breastfed in this year. The trend of breastfeeding initiation in Missouri PedNSS showed a steady increase from 32.4 percent in 1993 to 47.3 percent in 2001.

In 2001, the percentage of infants who were breastfed for at least 6 months in Missouri PedNSS was 28.5 percent. The lowest rate of those being breastfed for at least 6 months (25.0 percent) in Missouri was found among black children. The Southeastern District had the lowest percentage (22.0 percent) in this year. The increasing trend of breastfeeding duration in Missouri's PedNSS population was not as stable as that of the nation. There was a sharp decline from 23.6 percent in 1995 to 18.0 percent in 1996, and then the rate went up along each year to 28.5 percent in 2001.

In the Missouri 2001 PedNSS, the average level of breastfeeding duration for at least 12 months was 25.3 percent. Among the five race/ethnic groups, the lowest rate (23.2 percent) was found among black children. All the seven districts in Missouri had higher percentages of breastfeeding duration for at least 12 months than the national average level (13.6 percent) in 2001. The lowest rate (19.0 percent) was found in the Southeastern District. There had been a general trend of increase of the rate from 9.6 percent in 1993 to 25.3 percent in 2001 in Missouri PedNSS.

Conclusions and Recommendations

The groups at risk in Missouri PedNSS in regard to the eight health and nutrition status indicators have been searched by demographic variables of race/ethnic groups and geographic regions.

Looking from the perspective of ethnic groups, black children in Missouri PedNSS were at the highest risk in regard to the above indicators. The black children had the highest rates of short stature, underweight, low birth weight, and anemia in 2001. They had the lowest rates of breastfeeding initiation, breastfeeding duration for at least 6 months, and breastfeeding duration for at least 12 months in 2001. In order for future intervention programs to be effective, a greater focus needs to be placed on black children and their mothers, and more efforts should be given to the clarification of the underlying causes for this phenomenon.

Looking from the perspective of the seven regions of Missouri, the Eastern District of Missouri PedNSS had the highest risk of health problems in regard to the eight indicators. It is recommended that greater efforts be placed on improving the nutritional and health status of those participants in the Eastern District of Missouri.

INTRODUCTION

Background of Missouri PedNSS

The state of Missouri has participated in the Pediatric Nutrition Surveillance System (PedNSS) since 1988. The PedNSS was established in 1973 by the Department of Health and Human Services, Division of Maternal and Child Health and the Centers for Disease Control and Prevention (CDC). With the assistance of CDC the PedNSS monitors the growth, anemia and breastfeeding status of children in the United States who participate in the federally-funded maternal and child health and nutrition programs such as the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Currently data collected in this system is primarily from low- to moderate-income infants and children participating in these programs.

Poor nutritional status can affect growth, development and resistance to disease. Children, particularly those of low-income families, are highly vulnerable to nutrition-related health problems. The PedNSS is intended to monitor trends and patterns of key indicators of child nutritional status for program planning, developing appropriate health and nutrition interventions, and evaluation of programs.

Nutritional status data collected for children aged 0 to 4 years include weight, height and hemoglobin concentration level measured at specified visits for the WIC program (e.g., certification and re-certification). The anthropometric and hematologic data are used to calculate the nutrition indices that define short stature (low height-for-age), underweight (low weight-for-height), overweight (high weight-for-height), and anemia (low hemoglobin concentration or low hematocrit level). The data on birth weight and breastfeeding status are collected on children from birth to age 2.

Changes on Some of the Measures of National PedNSS in 2001

CDC has made minor improvements to the 2001 Pediatric Nutrition Surveillance System data tables for children less than 5 years old. These improvements include:

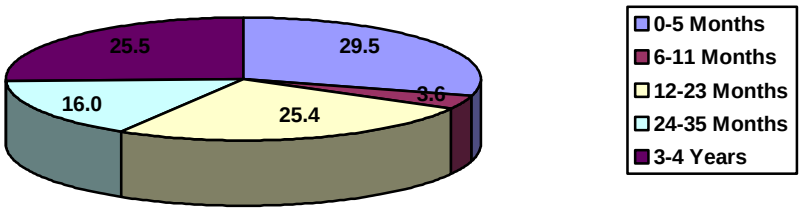
(1) If both Hb and Hct are reported on a child's record, only the Hb is used to establish anemia. The Hb is an earlier measure of iron deficiency anemia than the Hct. In the past PedNSS analyses, if both indices were reported on a child's record, both tests were referenced to establish whether the child was anemic.
(2) Low birth weight is defined as <2,500 grams and high birth weight is defined as >4,000 grams (these indices were incorrectly defined as ≤ 2,500 grams and ≥ 4,000 gram in the 2000 PedNSS reports.
(3) Biologically implausible values for birth weight were revised to < 250 grams or > 6,000 grams (past PedNSS analyses defined these values as <500 grams or > 6,000 grams).

These changes have slightly impacted the prevalence and trends of anemia, low birth weight, and high birth weight in some state reports including the one for Missouri.

Demographic Information about Missouri PedNSS

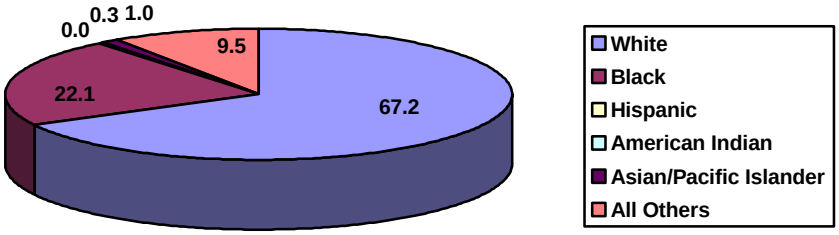
Missouri Department of Health and Senior Services contributed 135,205 records of individual children in 2001 to the national PedNSS for analysis. One hundred percent of this 2001 PedNSS data was obtained on infants and children enrolled in the WIC program in Missouri. The demographic information about Missouri PedNSS is the percentage distributions of age, race/ethnicity and regions.

Figure 1. Percentage Distribution for Age from the 2001 Missouri PedNSS



Out of the 135,205 children in the records, 39,872 (29.5 percent) were 0-5 months old, 4,913 (3.8 percent) were 6-11 months old, 34,375 (25.4 percent) were 12-23 months old, 21,574 (16.0 percent) were 24-35 months old, and 34,471 (25.5 percent) were 3-4 years old.

Figure 2. Percentage Distribution for Race/Ethnicity from the 2001 Missouri PedNSS*

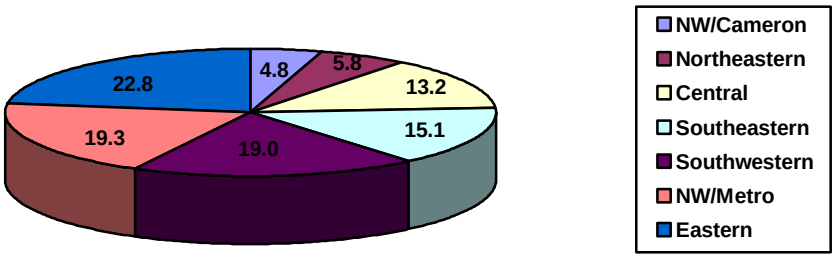


*The percentage of population for Hispanic children was 0.0 percent, that for American Indian/Alaskan Native was 0.3 percent, and that for Asian Pacific Islander was 1.0 percent. The group designated "All Others" is a valid response provided by the child's guardian when asked to indicate race/ethnic group. This category can include a race/ethnic group not represented by the previous four designations, or can include any combination of the race/ethnic group designations.

As reported in the previous years, the white and black children were the two major race/ethnic groups in Missouri's PedNSS population in 2001. Out of the 135,205 children in the records, 90,880 (67.2 percent) were white children, 28,856 (22.1 percent) were black children. The

children of these two race/ethnic groups were 89.3 percent in 2001. The total number of participants of the other three race/ethnic groups (Hispanic, American Indian/Alaskan Native, and Asian/Pacific Islander) was 1,684, which comprised less than 2 percent of the PedNSS population in this year.

Figure 3. Percentage Distribution for Regions from the 2001 Missouri PedNSS



*The Northwestern District includes two PedNSS regions, Northwestern/Cameron and Northwestern/Metro. Northwestern/Cameron includes counties of Atchison, Nodaway, Worth, Harrison, Holt, Andrew, Gentry, Dekalb, Davies, Buchanan, Clinton, Caldwell, Carroll and Johnson. Northwestern Metro includes counties of Platte, Clay, Ray, Lafayette, Jackson and Cass.

Among the seven regions, the Eastern District has only four counties. However, this small geographic area was the only region that had more than 20 percent of the Missouri PedNSS population in 2001. Other regions that had relatively large PedNSS population were the Northwestern/Metro District and the Southwestern District. The Northwestern/Metro District had 26,034 participants (19.3 percent), and the Southwestern District had 25,752 participants (19.0 percent)

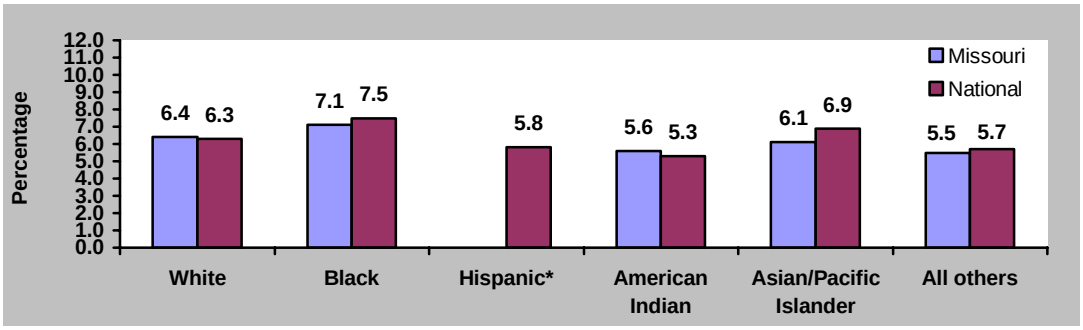
Health and Nutritional Status Indicators and Prevalence

Short Stature

Short stature in children is defined by CDC as less than the 5th percentile of the length-for-age. Short stature often reflects the long-term health and nutrition history of the child. In some children, short stature is related to factors such as low birth weight and short parental statures. Short stature may also be indicative of inadequate diet, delayed development and/or compromised health.

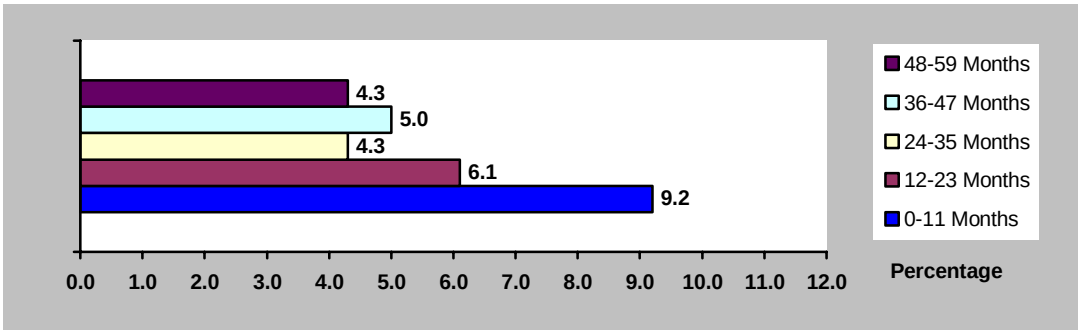
The prevalence of short stature in 2001 Missouri PedNSS was 6.5 percent, while the national rate in 2000 was 6.4 percent. Among the five race/ethnic groups, the highest rate of short stature in Missouri PedNSS in 2001 was seen among black children (7.1 percent). The lowest rate of short stature in 2000 was among American Indian/Alaskan Native children (5.6 percent).

Figure 4. Prevalence of Short Stature by Race/Ethnicity, 2001 Missouri and National PedNSS



*Percentages are not calculated if < 100 records are available for analysis after exclusions.

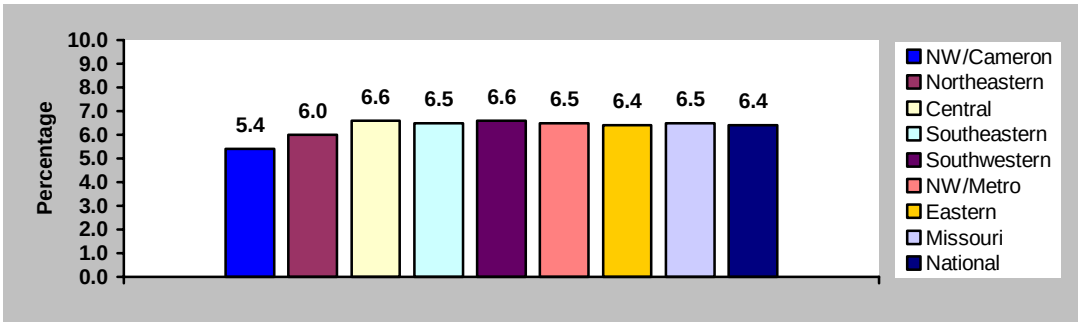
Figure 5. Prevalence of Short Stature by Age, 2001 Missouri PedNSS



Among the five age groups, the children aged 0-11 months had the highest rate (9.2 percent) of short stature in 2001, and the children aged 24-35 months and children aged 48-59 months had the lowest rate (4.3 percent).

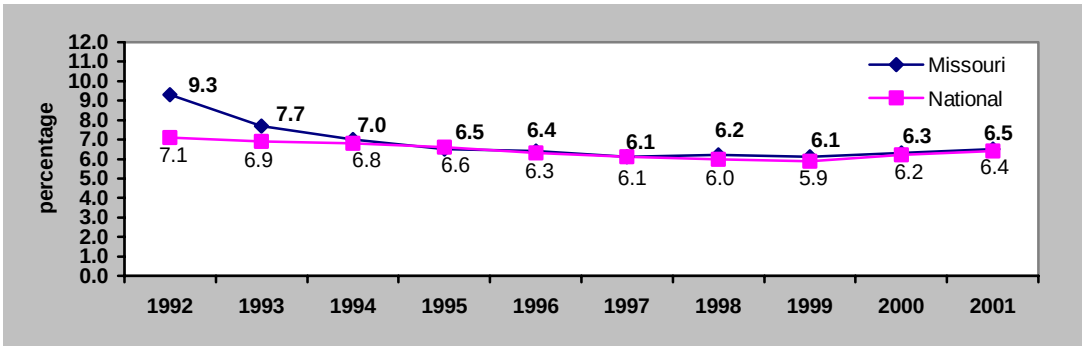
Among the seven regions of Missouri, the Northwestern/Cameron had the lowest rate in 2001 (5.4 percent). The Central District and the Southwestern District had the highest rate (6.6 percent) in 2001.

Figure 6. Prevalence of Short Stature by Regions, State and Nation, 2001 Missouri and National PedNSS



The overall prevalence rate for short stature in Missouri PedNSS declined steadily from 9.3 percent in 1992 to 6.1 percent in 1999, and then it increased again from 6.1 percent in 1999 to 6.5 percent in 2001. This trend corresponded with the national trend.

Figure 7. Ten-Year Trend in Prevalence of Short Stature, Missouri and National PedNSS

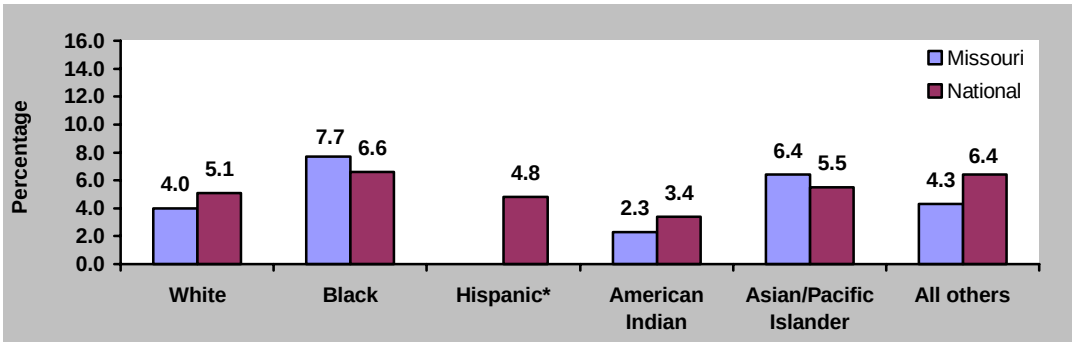


Underweight (Low Weight-for-Length)

Underweight in children is defined by CDC as falling less than the 5th percentile for the weight-for-length or BMI-for-age.

In 2001, the percentage of children found to be underweight was 4.9 percent in Missouri PedNSS and 5.4 percent in the national PedNSS. Black children in Missouri PedNSS had the highest percentage (7.7 percent) of underweight among the five race/ethnic groups, and American Indian children in Missouri PedNSS had the lowest percentage (2.3 percent) of underweight.

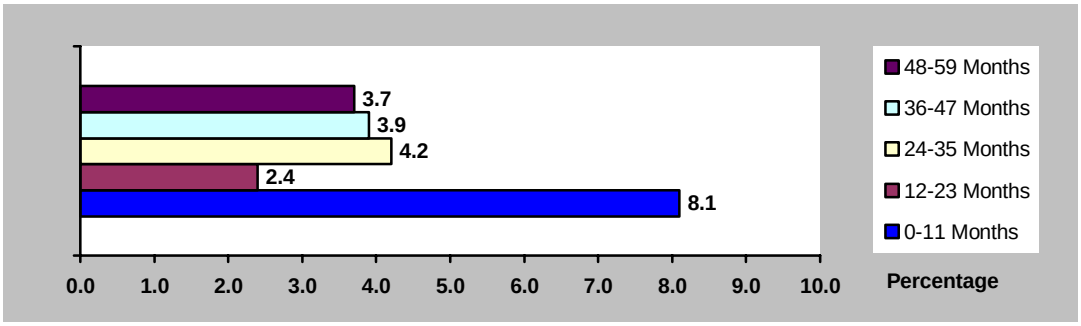
Figure 8. Prevalence of Underweight by Race/Ethnicity, 2001 Missouri and National PedNSS



*Percentages are not calculated if < 100 records are available for analysis after exclusions.

Among the five age groups, the children aged 0-11 months had the highest rate (8.1 percent) of underweight in 2001, and the children aged 12-23 months had the lowest rate (2.4 percent).

Figure 9. Prevalence of Underweight by Age, 2001 Missouri PedNSS



Regionally, Missouri's Eastern District had the highest percentage (8.2 percent) of underweight in PedNSS in 2001. This percentage was twice as high as most of the other regions. Five of the seven regions in Missouri PedNSS had underweight rates lower than 4 percent in this year.

Figure 10. Prevalence of Underweight by Regions, State and Nation, Missouri and National PedNSS 2001

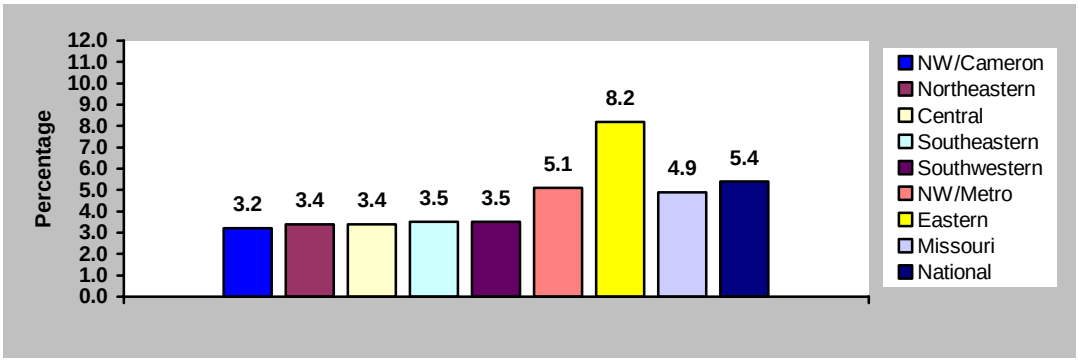
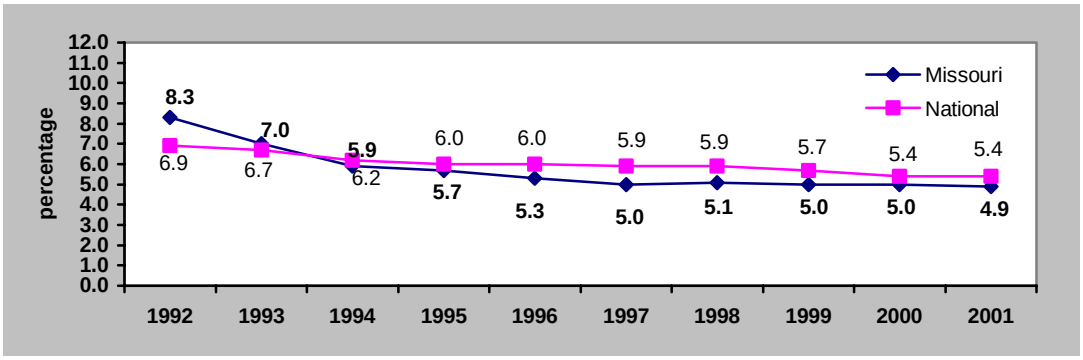


Figure 11. Ten-Year Trends in Prevalence of Underweight, Missouri and National PedNSS



The trend of underweight of Missouri PedNSS had been going down every year from 1992 to 2001, and the difference between the percentage of 1992 (8.3 percent) and the percentage of

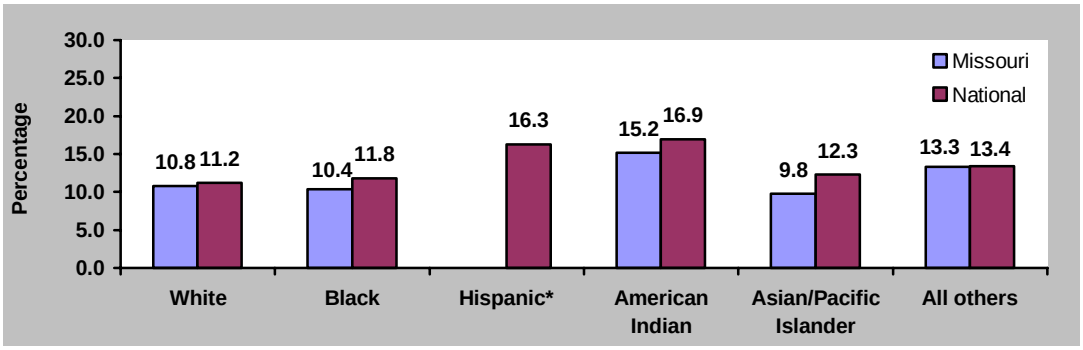
2001 (4.9 percent) was 3.4 percent. This difference was larger than the difference (1.5 percent) between these two years for the national PedNSS.

Overweight (High Weight-for-Length)

Overweight in children is defined by CDC as above the 95th percentile of the weight-for-length or BMI-for-age. The prevalence of obesity among children in low-income populations has been one of the most serious nutrition-related problems and a growing public health concern in the United States and in Missouri.

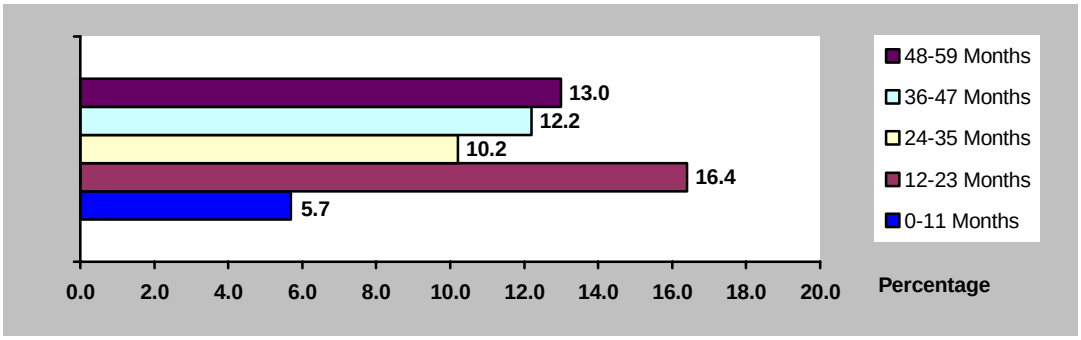
In 2001, American Indian/Alaskan American children in Missouri PedNSS had the highest percentage of overweight (15.2 percent) compared to the other four race/ethnic groups. The white, black, and Asian/Pacific children in Missouri PedNSS had approximately the same percentages in this year.

Figure 12. Prevalence of Overweight by Race/Ethnicity, 2001 Missouri and National PedNSS



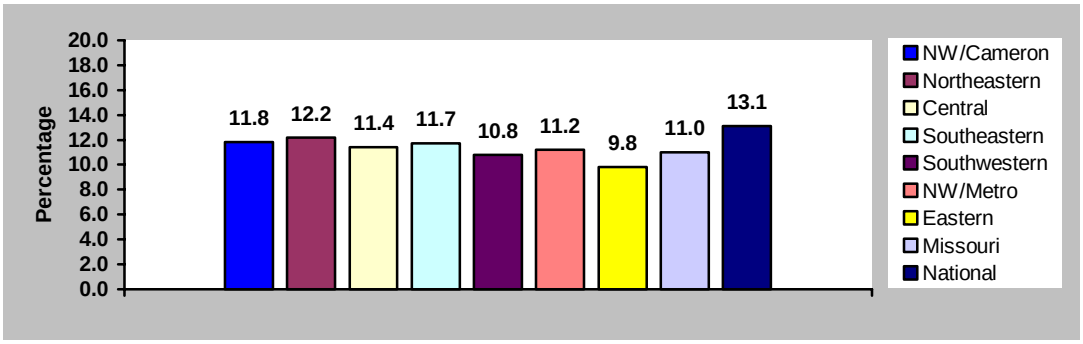
*Percentages are not calculated if < 100 records are available for analysis after exclusions.

Figure 13. Prevalence of Overweight by Age, 2001 Missouri PedNSS



Among the five age groups, the children aged 12-23 months had the highest rate (16.4 percent) of overweight in 2001, and the children aged 0-11 months had the lowest rate (5.7 percent).

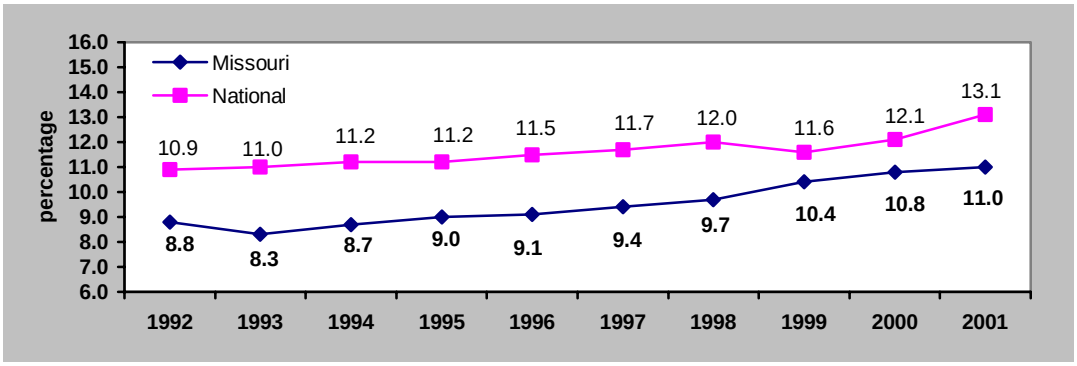
Figure 14. Prevalence of Overweight by Regions, State and Nation, Missouri and National PedNSS 2001



The prevalence of overweight in 2001 Missouri PedNSS was 11.0 percent, which was lower than the national rate (13.1 percent) for the year. Regionally, the Northeastern District had the highest one (12.2 percent) in 2001. The Eastern District had the lowest rate of overweight (9.8 percent) in the year.

There had been a general upward trend in the percentage of overweight in both Missouri and national PedNSS among children under five years of age. There was only a slight decline from 8.8 percent in 1991 to 8.3 percent in 1993 in the trend for children in Missouri PedNSS, and a slight decline from 12.0 percent in 1998 to 11.6 percent in 1999 for children in the national PedNSS.

Figure 15. Ten-Year Trends in Prevalence of Overweight, Missouri and National PedNSS

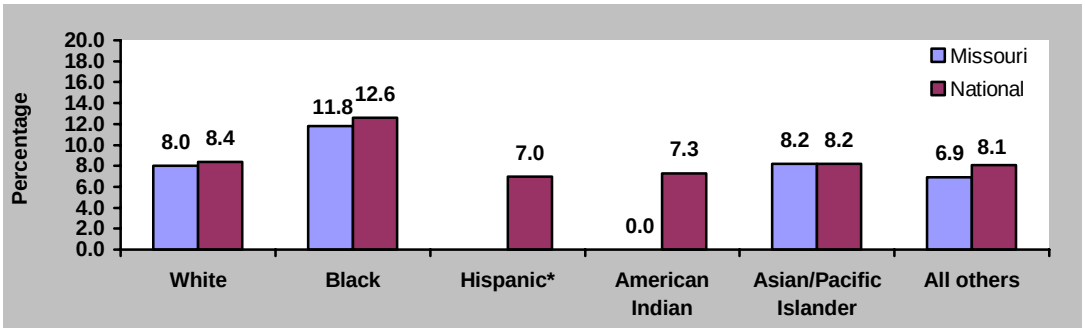


Low Birth Weight (< 2,500 grams)

Low birth weight is defined by CDC as a birth weight less than 2,500 grams or 5.5 pounds. Low birth weight may occur when an infant is born at less than 37 weeks of gestation, when intrauterine growth is compromised, or as a result of both conditions.

In 2000, the prevalence of low birth weight in Missouri PedNSS was 8.9 percent, and that for the national PedNSS was 9.0 percent.

Figure 16. Prevalence of Low Birth Weight by Ethnicity, 2001 Missouri and National PedNSS



* Percentages are not calculated if < 100 records are available for analysis after exclusions.

In Missouri PedNSS, black children had the highest percentage of low birth weight (11.8 percent), and white children had the lowest one (8.0 percent) in 2001. Black children were the only race/ethnic group that had a higher rate of low birth weight than the national average in this year.

Missouri's Eastern District had the highest low birth weight rate (10.4 percent) and the Northwestern/Cameron had the lowest low birth weight rate (6.9 percent) in 2001.

Figure 17. Prevalence of Low Birth Weight by Regions, State and Nation, Missouri and National PedNSS 2001

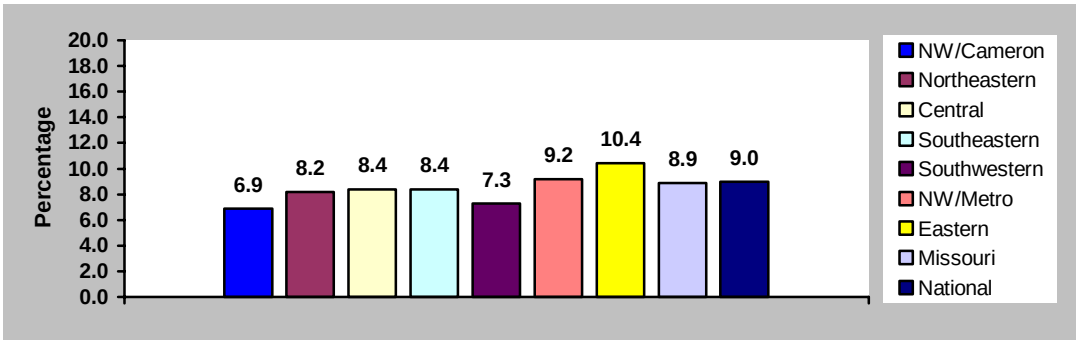
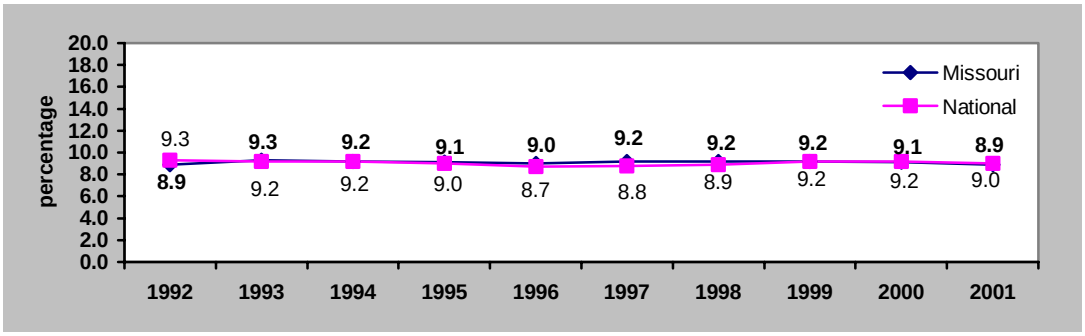


Figure 18. Ten-Year Trends in Prevalence of Low Birth Weight, Missouri and National PedNSS



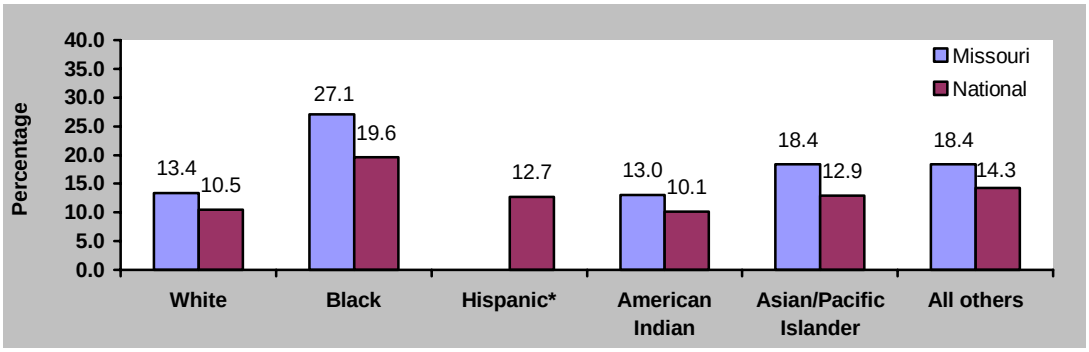
Both the trend of the low birth weight rate of Missouri PedNSS and that of the nation showed only slight fluctuations from 1992 to 2001. In addition, the two trends corresponded closely. The largest discrepancies between the two trends were the percentage difference (0.4 percent) in the year 1992 and the percentage difference (0.4 percent) in the year 1997.

Anemia

Anemia is characterized by low levels of hemoglobin and/or hematocrit that result in a reduction in the oxygen carrying capacity of the blood. Although there are several causes of anemia, iron deficiency is the most common cause in the United States. In the Missouri PedNSS, low hemoglobin is used as an indicator for anemia. The case definition of anemia recommended by CDC is <5th percentile of the distribution of Hb concentration in a healthy reference population and is based on age, sex, and (among pregnant women) stage of pregnancy.

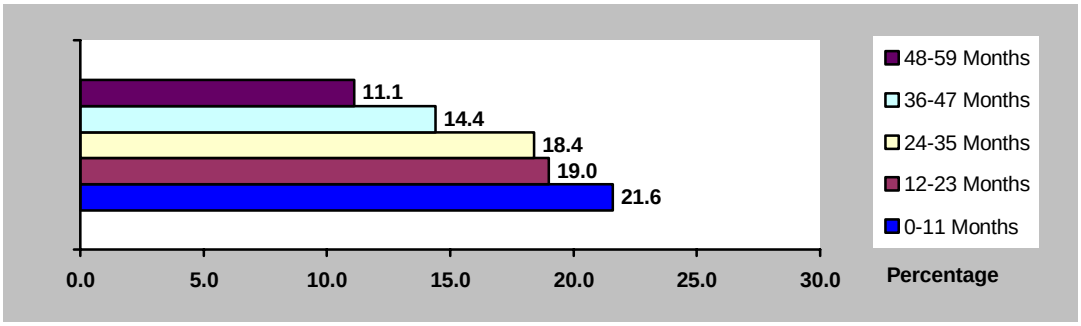
In 2001, the prevalence of anemia in Missouri PedNSS was 16.8 percent, while the national rate of anemia was 13.3 percent. Black children's rate of anemia in Missouri (19.6 percent) was high compared with either of these two average levels. American Indian children in Missouri PedNSS had the lowest rate of anemia (10.1 percent). Black children were the only race/ethnic group in Missouri PedNSS that had a higher rate of anemia than the national average level in this year.

Figure 19. Prevalence of Anemia by Race/Ethnicity, 2001 Missouri and National PedNSS



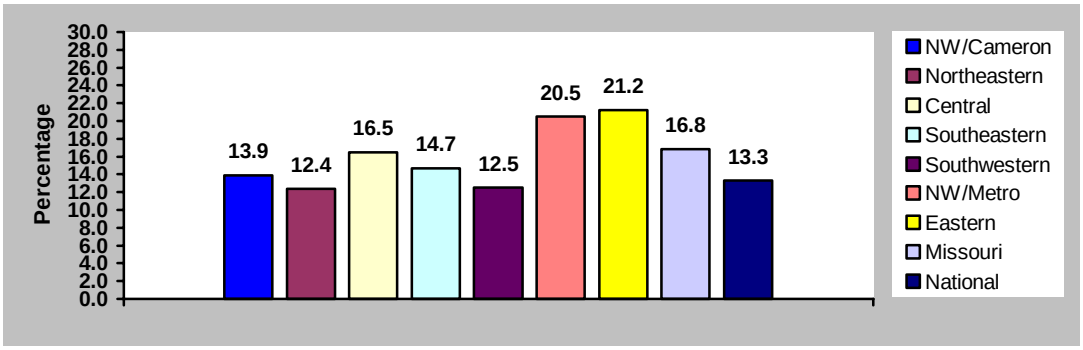
*Percentages are not calculated if < 100 records are available for analysis after exclusions.

Figure 20. Prevalence of Anemia by Age, 2001 Missouri PedNSS



Among the five age groups, the children aged 0-11 months had the highest rate (26.1 percent) of anemia in 2001, and the children aged 48-59 months had the lowest rate (11.1 percent).

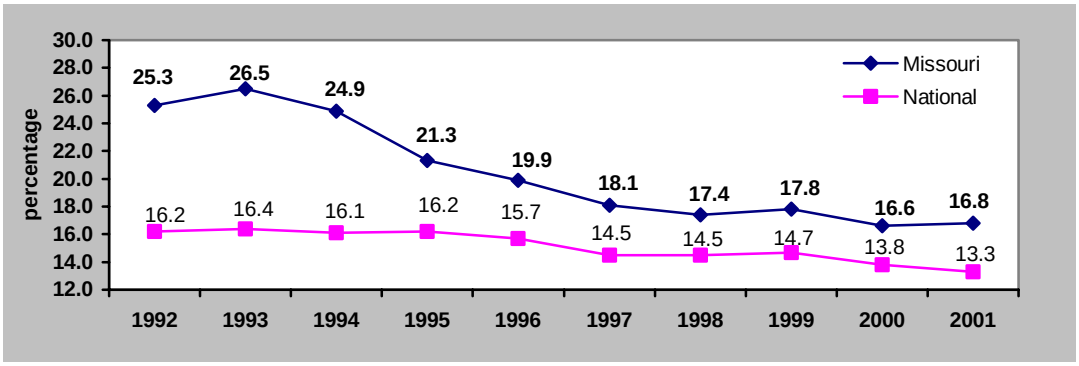
Figure 21. Prevalence of Anemia by Regions, State and Nation, Missouri and National PedNSS 2001



Regionally, five of the seven regions of Missouri PedNSS (NW/Cameron, Central, Southeastern, Northwestern/Metro, and Eastern districts) had higher rates of anemia than the national average. Especially, the Northwestern/Metro and the Eastern District had obviously higher percentages of anemia among children in PedNSS in 2001 compared with other regions of Missouri and the nation.

There has been a general declining trend in the rate of anemia among children in PedNSS in both Missouri and the nation. However, the rate of anemia of Missouri's PedNSS has always been higher than the average level of the nation, although the difference between the rate of Missouri and that of the nation was becoming smaller (the largest was 10.1 percent in 1993, and the smallest was 2.8 percent in 2000).

Figure 22. Trends in Prevalence of Anemia, Missouri and National PedNSS

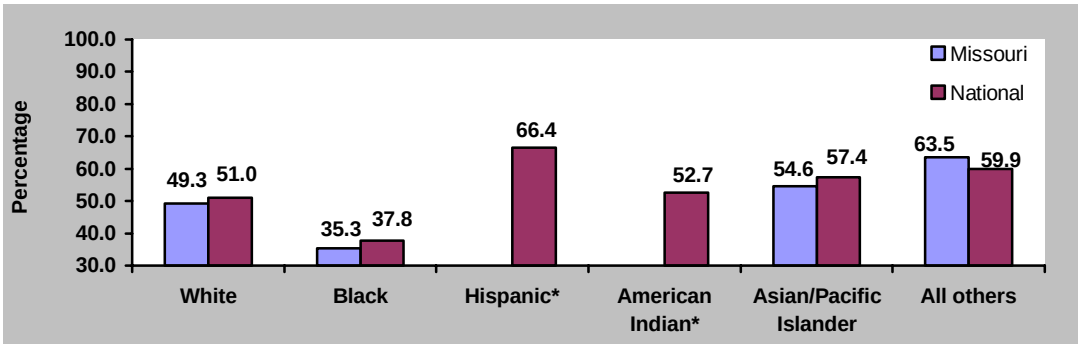


Ever Breastfed

In 2000, the percentage of infants who were ever breastfed in the Missouri PedNSS was 47.3 percent, and that in the national PedNSS was 50.9 percent. In Missouri 2001 PedNSS, black children had the lowest percentage (35.3 percent) of ever being breastfed, while the

Asian/Pacific Islander children had the highest rate (54.6 percent). Asian/Pacific Islander children were the only race/ethnic group that had a higher percentage of ever being breastfed than the national average (50.9 percent) in that year.

Figure 23. Prevalence of Ever Breastfed by Race/Ethnicity, 2001 Missouri and National PedNSS



*Percentages are not calculated if < 100 records are available for analysis after exclusions.

Compared with the national average rate (50.9 percent) in 2001, the Southwestern District and the Northwestern/Metro in Missouri had higher rates (58.9 percent and 51.9 percent respectively) of ever being breastfed.

Figure 24. Prevalence of Ever Breastfed by Regions, State and Nation, Missouri and National PedNSS 2001

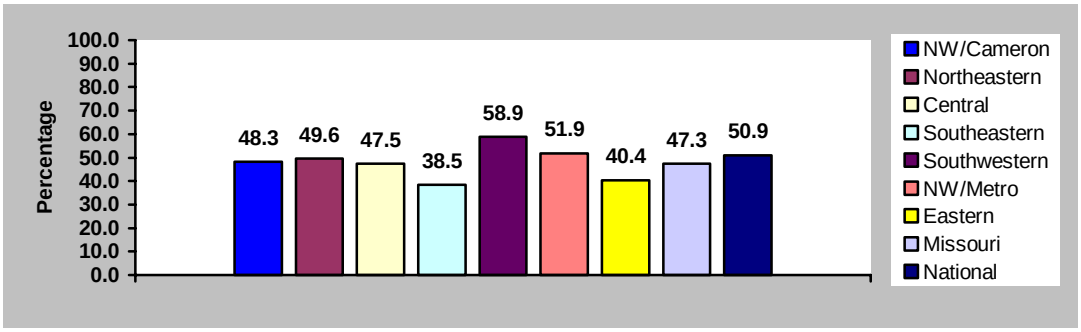
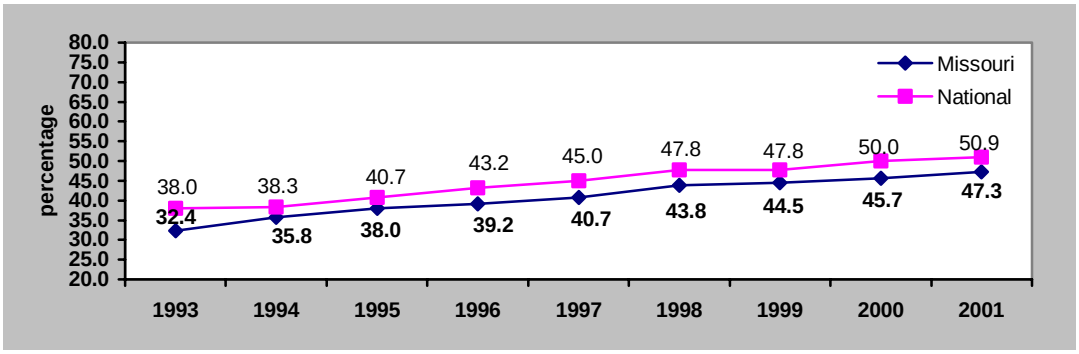


Figure 25. Trends in Rates of Ever Being Breastfed, Missouri and National PedNSS



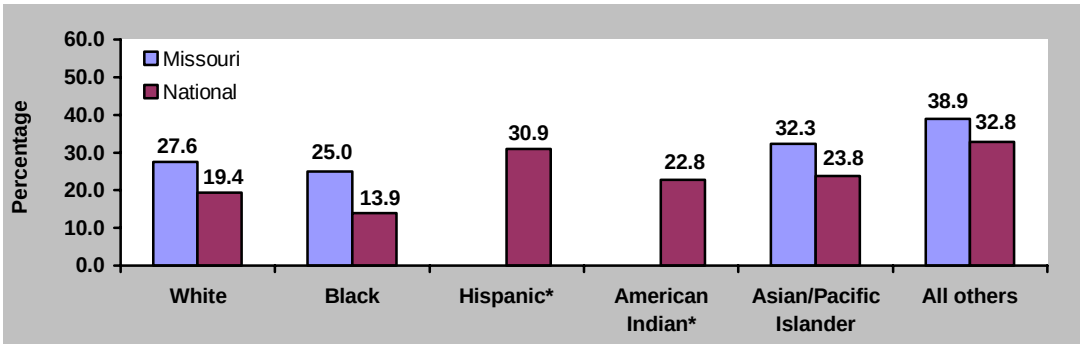
The rate of ever being breastfed for Missouri PedNSS increased from 32.4 percent in 1993 to 47.3 percent in 2001. The national rate of ever being breastfed was 41.9 percent in 1993, and 50.9 percent in 2001. Comparatively, the rate of ever being breastfed in Missouri has been consistently lower that the national average.

Breastfeeding Duration for at Least 6 Months

In 2001, the percentage of infants who were breastfed for at least 6 months in Missouri PedNSS was 28.5 percent, and that in the national PedNSS was 20.8 percent. The lowest rate of being breastfed for at least 6 months in Missouri was found among black children, which was 25.0 percent, and the highest rate was found among the Asian/Pacific Islander group, which was 32.3 percent.

As for the regions, the Southwestern District of Missouri had the highest rate of being breastfed for at least 6 months (32.7 percent) in 2001. The Southeastern District had the lowest percentage (22.0 percent) in this year.

Figure 26. Prevalence of Breastfeeding Duration for at Least 6 Months by Race/Ethnicity, 2001 Missouri and National PedNSS



*Percentages are not calculated if < 100 records are available for analysis after exclusions.

Figure 27. Prevalence of Breastfeeding Duration For At Least 6 Months by Regions, State, and Nation, Missouri and National PedNSS 2001

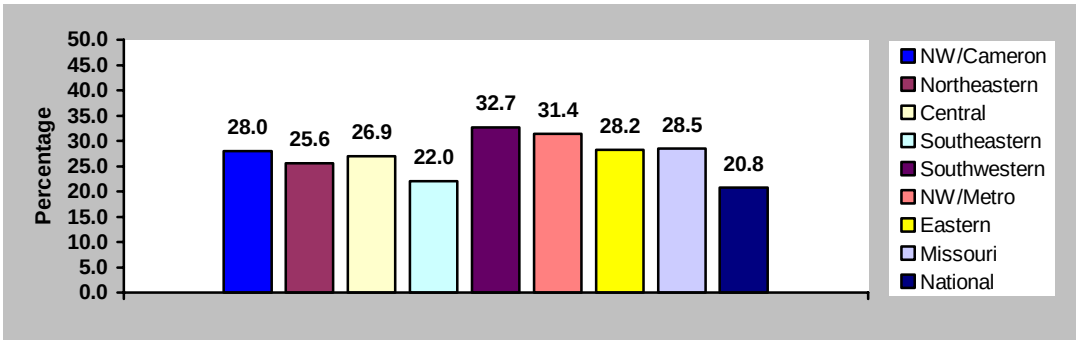
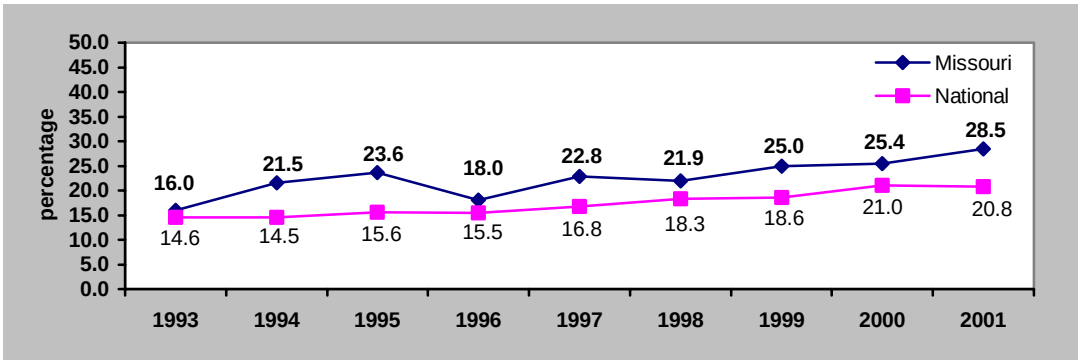


Figure 28. Trends in Rates of Breastfeeding Duration for at Least 6 Months, Missouri and National PedNSS

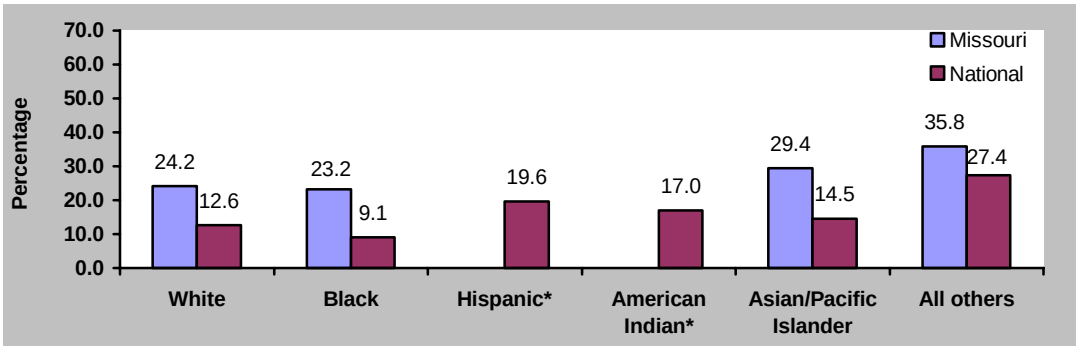


There has been a steady increase in the duration of breastfeeding for at least 6 months for the national PedNSS population. Comparatively, this increasing trend of breastfeeding duration in Missouri's PedNSS population was not as stable as that of the nation. There was a sharp decline from 23.6 percent in 1995 to 18.0 percent in 1996, and then the rate went up each year to 28.5 percent in 2001.

Breastfeeding Duration for at Least 12 Months

In 2001, the average rate for infants who were breastfed for at least 12 months was 25.3 percent in Missouri PedNSS, and that in the national PedNSS was 13.6 percent. Among the five race/ethnic groups, the highest rate (29.4 percent) was found among Asian/Pacific Islander children, and the lowest rate (23.2 percent) was among black children. However, there was not a large discrepancy between the two rates.

Figure 29. Prevalence of Breastfeeding Duration for at Least 12 Months by Race/Ethnicity, 2001 Missouri and National PedNSS



*Percentages were not calculated if < 100 records are available for analysis after exclusions.

All the seven regions in Missouri had higher percentages of breastfeeding duration for at least 12 months than the national average level in 2001. The highest rate (25.4 percent) was found in the Southwestern District, and the lowest (14.1 percent) was found in the Southeastern District.

Figure 30. Prevalence of Breastfeeding Duration For At Least 12 Months by Regions, State and Nation, Missouri and National PedNSS 2001

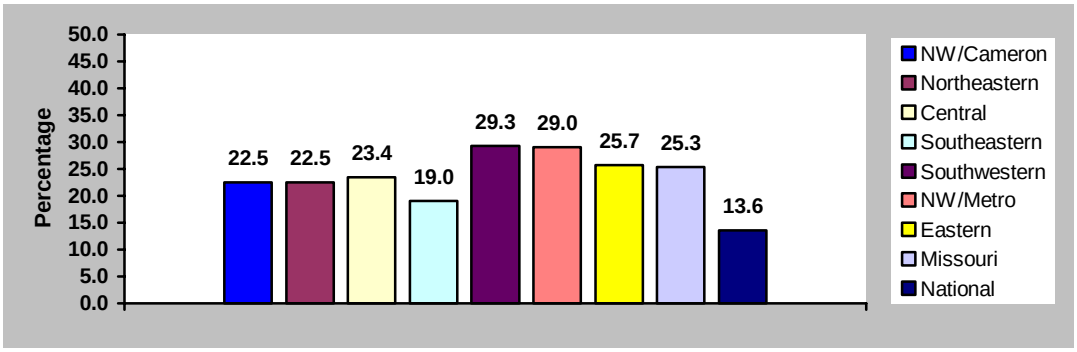
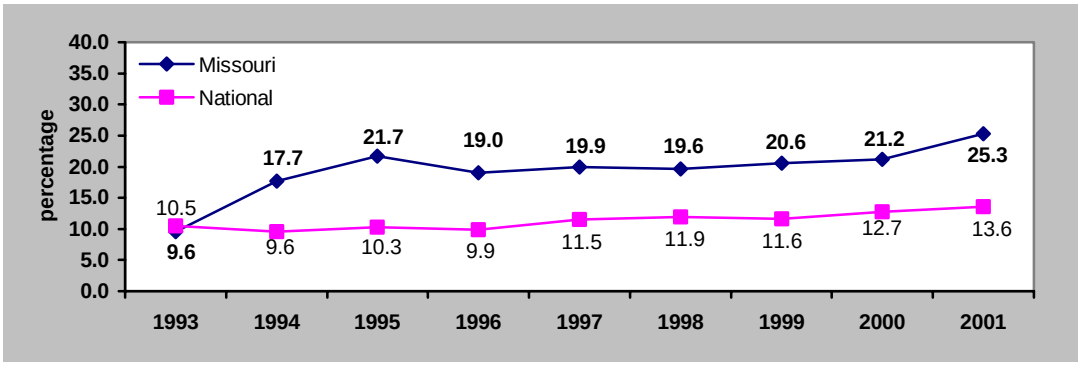


Figure 31. Trends in the Rates of Breastfeeding Duration for at Least 12 Months, Missouri and National PedNSS



The increase in the percentage of breastfeeding duration for at least for 12 months had been stable during the years from 1993 to 2001. The trend of Missouri's PedNSS was not as stable as that of the nation. However, it is worth noting that since 1994, the difference between the percentage of breastfeeding duration for at least 12 months for the nation and that for Missouri reached almost 10 percent, and this large difference had been maintained to the year 2001.

CONCLUSIONS AND RECOMMENDATIONS

In this report, eight nutritional indicators (short stature, underweight, overweight, low birth weight, anemia, ever breastfed, breastfeeding duration for at least 6 months, and breastfeeding duration for at least 12 months) have been used to examine the health status of Missouri PedNSS children. The high risk groups have been identified by demographic variables such as race/ethnic groups and geographic regions.

Looking from the perspective of race/ethnic groups, black children in Missouri PedNSS was the group with the most risk in regard to the above indicators. The black children in Missouri PedNSS had the highest rates of short stature, underweight, low birth weight, anemia, the lowest rates of ever breastfeeding, breastfeeding for at least 6 months, and breastfeeding for at least 12

months in 2001. It is highly recommended that future intervention programs should focus more attention on black children, and more efforts should be given to the clarification of the underlying causes for this phenomenon.

The second highest at risk race/ethnic group in Missouri PedNSS was the Asian/Pacific Islander children. They had high rates of underweight, anemia, and low rates of breastfeeding duration for at least 6 months and breastfeeding duration for at least 12 months.

The American Indian/Alaskan Native children had the highest rate of overweight in this year.

The white children had a relatively high rate of short stature and low rates of breastfeeding for at least 6 months and breastfeeding for at least 12 months in this year.

Looking from the perspective of the seven regions of Missouri, a ranking method was adopted for evaluating the degree of risk of health problems regarding the eight health risk indicators for the seven PedNSS regions. (Refer to Appendix, Table 1)

With this method, it was concluded that in 2001 Eastern District of Missouri PedNSS had the highest risk of health problems in regard to the eight health situation indicators, and the Southwestern District had the lowest risk. Central District and Southeastern District also had relatively higher risk situations, especially to breastfeeding problems. It is recommended that the programs that focus attention and resource on black children should also focus on the Eastern District of Missouri PedNSS. From the above analysis, it is highly probable that the black children in Eastern District are the children most at risk in regard to the eight indicators, and therefore it is necessary for the state and local government agencies to pay more attention to this race/ethnic group in this region.

Looking from the perspective of trend, Missouri PedNSS's short stature trend, underweight trend, and anemia trend, had been going down generally from 1992 to 2001. There had been obvious improvements for breastfeeding in these years. Rates in breastfeeding (ever breastfed, breastfeeding duration for at least 6 months, breastfeeding duration for at least 12 months) went up generally from 1993 to 2001. Also, contrary to the efforts made in these years, the trend of overweight in Missouri PedNSS has been going up, which has become a major challenge to both local and state government agencies.

Appendix

Ranking Method for Evaluating Risk in Regard to the Eight Nutrition and Health Indicators in the Seven Regions of Missouri

The method has three steps:

(1) By comparing the rate of each region to the mean value of the state of a perspective year, an asterisk was assigned to a region if this region's value was higher (or lower) than the mean value of the state for a certain indicator.
(2) Total number of asterisks were counted for each region on all the eight health risk indicators for the two years.
(3) The seven regions were ranked in regard to the risk by putting the region that had more asterisks on the higher order and the one with the fewer number of asterisks on the lower order.

Table 1. Missouri PedNSS Regions Ranking for Having Risk in Regard to the Eight Nutrition and Health Indicators in 2001

Health and Nutrition Risk Indicators	State Preva-lence	NW/ Cameron	North-eastern	Central	South-eastern	South-western	NW/ Metro	Eastern
Short Stature >	8.9%	*	*					*
Underweight >	16.8%							*
Overweight >	11.0%	*	*	*	*		*	
Low Birth Weight >	8.9 %						*	*
Anemia >	16.8%						*	*
Ever Breastfed <	47.3%				*			*
Breastfeeding for at Least 6 Months <	28.5%	*	*	*	*			*
Breastfeeding for at Least 12 Months <	25.3%	*	*	*	*			
Total Number of Asterisks for Each Region		**4**	**4**	**3**	**4**	**0**	**3**	**6**
Ranking of Risk for Each Region		**2**	**2**	**3**	**2**	**4**	**3**	**1**

> An asterisk was assigned to a region if its rate was higher than the state prevalence.
< An asterisk was assigned to a region if its rate was lower than the state prevalence.